

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Independent Claim 1 recites "forming a natural language answer to the query within an artificial intelligence engine without requesting additional information from the caller", but also recites "the call center providing the natural language answer to the caller to simulate a natural language conversation with the caller" (and independent Claims 8, 15, and 20 contain very similar language for both features). The combination of these features is confusing because the formation of a natural language answer without requesting additional information would seem to preclude the possibility of a conversation between the caller and the AI engine.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4-8, 13-15, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kassan, U.S. Patent Application Publication 2001/0047261, in view

of Alpdemir, U.S. Patent Application Publication 2002/0035474, further in view of Andersen et al., U.S. Patent No. 6,640,231.

Regarding Claim 1, Kassan discloses a method of processing calls in a call processing center of an organization that processes calls in support of enterprise activities of the organization (there exists a method for automatically answering questions that callers may have for a company or organization, according to Abstract, [0002], [0063]-[0064], Fig. 2), such method comprising the steps of:

receiving a query in the form of a natural language sentence about the enterprise activities of the organization from a caller during a call through the call center of the organization (a user places a call to a computer and asks a question in natural language form, according to Abstract, [0039]-[0041], [0061], whereby said computer answers customer-related questions for business or organization, according to [0063]-[0064]);

forming a natural language answer to the query within an artificial intelligence engine without requesting additional information from the caller by correlating the query against a plurality of answers and selecting the most probable answer of the call center, and incorporates the expertise of a live agent and a knowledge universe that comprises the enterprise activities of the organization (an artificial intelligence engine of the computer forms a natural language answer to the question, according to [0039], [0076], whereby the best answer is determined and may be given after only a single question has been asked by the user, according to [0053], whereby the computer has a knowledge base that allows said computer to answer questions related to the company

or organization, according to [0041], [0063]-[0064], and whereby said computer is designed to function in place of a human operator, according to [0075]); and

the call center providing the natural language answer to the caller to simulate a natural language conversation with the caller without use of menu selection (a natural language conversation may take place between the caller and the computer, according to Abstract, [0076], whereby menu selection is not disclosed as taking place).

Kassan does not expressly disclose translating the query into voice extensible mark-up language, nor that the artificial intelligence engine implements second order logic.

Alpdemir discloses translating a query into voice extensible mark-up language (a user's question can then be translated into Voice Extensible Markup Language (VXML) with a speech-to-text (STT) conversion engine, according to [0138] Lines 1-17, Fig. 1).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Kassan by translating the query into voice-extensible mark-up language.

One of ordinary skill in the art would have been motivated to make this modification in order to facilitate the extraction of required information from a database (Alpdemir: [0138]).

Neither Kassan nor Alpdemir expressly disclose an artificial intelligence engine that implements second order logic.

Andersen et al. discloses an artificial intelligence engine that implements second order logic (second-order logic is used in the creation and maintenance of ontologies for a database, according to Abstract, Column 2 Lines 17-41, Column 3 Lines 1-20, Column 10 Lines 1-15, Column 11 Line 65 to Column 12 Line 2, Fig. 1).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Kassan as modified by Alpdemir such that the artificial intelligence engine implements second order logic.

One of ordinary skill in the art would have been motivated to make this modification in order to facilitate the creation of new sentences from a given sentence (Andersen et al.: Column 9 Line 51 to Column 10 Line 42).

Claims 8 and 15 differ substantively from Claim 1 in that the former claims disclose an apparatus that the method recited by the latter uses. Kassan discloses an apparatus that is used by the method of the invention of Kassan (namely, the computer, according to Abstract, [0040], Fig. 1).

Regarding Claim 4, Kassan discloses that the artificial intelligence engine duplicates prior successful conversation strategies using identity and contact history of the caller thereby mimicing a live agent (the system records all dialogs, configuration information, diagnoses, etc., and incorporates this information into the knowledge base in order to better serve the user the next time said user calls the system, according to [0052], [0069]).

Regarding Claim 5, Kassan discloses that the artificial intelligence engine utilizes the expertise and inputs associated with a live agent (the computer is designed to

replace a human operator as much as possible in answering callers' questions, according to Abstract, [0075], Fig. 2).

Regarding Claim 6, neither Kassan nor Andersen et al. expressly discloses that the step of receiving the query further comprises detecting the query within at least one of an html document and an email.

Alpdemir discloses that receiving a query further comprises detecting the query within an html document (a personal computer (PC), personal digital assistant (PDA), or other appliance capable of displaying HTML pages may submit a query to the information center, according to Abstract, [0139] Lines 8-19, Fig. 1).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Kassan as modified by Alpdemir as modified by Andersen et al. such that the step of receiving the query further comprises detecting the query within at least one of an html document and an email.

One of ordinary skill in the art would have been motivated to make this modification in order to allow the user to submit the query via the Internet (Alpdemir: [0139]).

Regarding Claim 7, Kassan discloses that the artificial intelligence engine knowledge universe is limited to only the enterprise activities of the organization enabling the artificial intelligence engine to generalize otherwise indeterminate inquiries (the knowledge base is limited to particular subject matter, such as the operation of a particular website, according to [0044], whereby the artificial intelligence engine drills

down to the most specific or best defined subject matter that the caller is interested in, according to [0076]).

Claim 13 does not differ substantively from Claim 6, and is therefore rejected on the same grounds as the latter.

Regarding Claim 14, neither Kassan nor Alpdemir expressly discloses that the artificial intelligence engine implements a subset of second order logic.

Andersen et al. discloses that an artificial intelligence engine implements a subset of second order logic (an Ontology Works Language (OWL) is a subset of the Knowledge Interchange Format (KIF) language, according to Column 8 Lines 21-32, whereby KIF language includes second order logic, according to Column 10 Lines 43-63).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Kassan as modified by Alpdemir as modified by Andersen et al. such that the artificial intelligence engine implements a subset of second order logic.

One of ordinary skill in the art would have been motivated to make this modification in order to provide upward compatibility (Andersen et al: Column 8 Lines 21-32).

Regarding Claim 18, Kassan discloses that all calls to the call processing center are routed to the interpreter and wherein only exceptional calls are re-routed to a live agent (the caller is only connected to a human operator after a rating for the

conversation between the caller and computer falls below a certain level, or if the caller insists on speaking with a human operator, according to [0040], [0075]).

Regarding Claim 19, Kassan does not expressly disclose that the means for receiving the query further comprises a web site adapted to detect the query within an e-mail.

Alpdemir discloses that the means for receiving a query further comprises a web site adapted to detect the query within an e-mail (a query may be submitted via email, according to [0054]).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Kassan as modified by Alpdemir as modified by Andersen et al. such that the means for receiving the query further comprises a web site adapted to detect the query within an e-mail.

One of ordinary skill in the art would have been motivated to make this modification in order to enable the inclusion of attachments (Alpdemir: [0054]).

5. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kassan in view of Alpdemir, further in view of Saylor et al., U.S. Patent No. 6,792,086.

Kassan discloses a method of processing calls in a call processing center of an organization (there exists a method for automatically answering questions that callers may have for a company or organization, according to Abstract, [0002], [0063]-[0064], Fig. 2), such method comprising the steps of:

the call center of the organization receiving a question in natural language sentence form from a caller during a call (a user places a call to a computer and asks

a question in natural language form, according to Abstract, [0039]-[0041], [0061], whereby said computer answers customer-related questions for business or organization, according to [0063]-[0064]);

determining a natural language answer to the question within the artificial intelligence engine by correlating the question against a plurality of answers and selecting the most probable answer adapted to provide answers subjectively focused on the organization based upon incorporating expertise of a live agent and a knowledge universe limited to an agenda of the organization enabling the artificial intelligence engine to generalize otherwise indeterminate questions (an artificial intelligence engine of the computer forms a natural language answer to the question, according to [0039], [0076], whereby the best answer is determined and may be given after only a single question has been asked by the user, according to [0053], whereby the computer has a knowledge base that allows said computer to answer questions related to the company or organization, according to [0041], [0063]-[0064], and whereby said computer is designed to function in place of a human operator, according to [0075]);

the call center providing the natural language answer to the caller in the form of audible speech to simulate a natural language conversation with the caller without use of menu presentation (a natural language conversation may take place between the caller and the computer, according to Abstract, [0076], whereby menu selection is not disclosed as taking place).

Kassan does not expressly disclose that the question is text-based, nor converting the text-based question into a metaprogramming language understood by an artificial intelligence engine of the call center, nor that the artificial intelligence engine encodes the answer in VXML code.

Alpdemir discloses that the question is text-based (a personal computer (PC), personal digital assistant (PDA), or other appliance capable of displaying HTML pages may submit a query to the information center, according to Abstract, [0139] Lines 8-19, Fig. 1), and converting the text-based question into a metaprogramming language understood by an artificial intelligence engine of the call center (a user's question can then be translated into Voice Extensible Markup Language (VXML), according to [0138] Lines 1-17, Fig. 1).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Kassan such that the question is text-based, and by converting the text-based question into a metaprogramming language understood by an artificial intelligence engine of the call center.

One of ordinary skill in the art would have been motivated to make this modification in order to facilitate the extraction of required information from a database (Alpdemir: [0138]).

Neither Kassan nor Alpdemir expressly disclose that the artificial intelligence engine encodes the answer in VXML code.

Saylor et al. discloses that an artificial intelligence engine encodes the answer in VXML code (VXML information that is an answer to a submitted question may be

passed through a TTS in order to create a sound file that is subsequently played for the user, according to Column 8 Lines 16-34; alternatively, the VXML information may delivered to the user as a text file, according Column 8 Lines 34-38).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Kassan as modified by Alpdemir such that the artificial intelligence engine encodes the answer in VXML code.

One of ordinary skill in the art would have been motivated to make this modification because the customer may be using a device that is more suited to receiving an answer in extensible markup language form than in the form of synthesized speech.

6. Claims 2, 9, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kassan in view of Alpdemir, further in view of Andersen et al., further in view of Gavan et al., U.S. Patent No. 6,601,048, further in view of Dezonmo, U.S. Patent No. 6,233,333.

Kassan discloses enabling the artificial intelligence engine to draw inferences to form a context for forming the answer to the query (recordings of previous dialogues with a particular user are used to form a context when that user calls again, according to [0052], [0069]).

Neither Kassan, nor Alpdemir, nor Andersen et al. expressly disclose that the artificial intelligence engine utilizes a caller call record including identity and contact history, wherein the caller call record and a second call are delivered to the artificial intelligence engine at substantially the same time.

Gavan et al. discloses that an artificial intelligence engine utilizes a caller call record including identity and contact history (, in the context of telecommunications fraud detection, artificial intelligence is used to monitor event records that are stored in a call history database, said records containing information pertaining to the identity of the caller and the called parties, according to Column 3 Lines 38-64, Column 11 Lines 4-65, Figs. 2 and 4).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Kassan as modified by Alpdemir as modified by Andersen et al. such that the artificial intelligence engine utilizes a caller call record including identity and contact history.

One of ordinary skill in the art would have been motivated to make this modification so as to provide a less rigid system of pattern analysis in the processing of a telecommunications traffic (Gavan et al.: Column 2 Lines 6-15).

Neither Kassan, nor Alpdemir, nor Andersen et al., nor Gavan et al. expressly discloses that the caller call record and a second call are delivered to the artificial intelligence engine at substantially the same time.

Dezonmo discloses that a caller call record and a second call are delivered to an artificial intelligence engine at substantially the same time (there exists an apparatus and method for identifying a call record that is to be delivered from one automatic call distributor to another automatic call distributor, according to Abstract, Column 2 Line 60 to Column 3 Line 13, Figs. 1-2, whereby customer records for a caller, and

said caller's call, are delivered to a selected agent simultaneously, according to Column 7 Lines 30-44).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Kassan as modified by Alpdemir as modified by Andersen et al. as modified by Gavan et al. such that the caller call record and a second call are delivered to the artificial intelligence engine at substantially the same time.

One of ordinary skill in the art would have been motivated to make this modification in order to expedite the handling of the call (Dezonmo: Column 7 Line 55 to Column 8 Line 3).

7. Claims 3, 10-11, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kassan in view of in view of Alpdemir, further in view of Andersen et al., further in view of Saylor et al.

Regarding Claims 3 and 10, neither Kassan, nor Alpdemir, nor Andersen et al. expressly discloses that the step of forming an answer further comprises forming the answer in the form of VXML code within the AI engine.

Saylor et al. discloses that a step of forming an answer further comprises forming the answer in the form of VXML code within an AI engine (VXML information that is an answer to a submitted question may be passed through a TTS in order to create a sound file that is subsequently played for the user, according to Column 8 Lines 16-34; alternatively, the VXML information may delivered to the user as a text file, according to Column 8 Lines 34-38).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Kassan as modified by Alpdemir as modified by Andersen et al. such that that the step of forming an answer further comprises forming the answer in the form of VXML code within the AI engine.

One of ordinary skill in the art would have been motivated to make this modification because the customer may be using a device that is more suited to receiving an answer in extensible markup language form than in the form of synthesized speech.

Regarding Claim 11, Kassan discloses that the artificial intelligence engine is not measurably objectively accurate in responding to queries (the rating for the dialog quality may fall below a predetermined threshold, in which case the caller is transferred to a human operator, according to Abstract, [0040], [0047]).

Regarding Claim 17, neither Kassan, nor Alpdemir, nor Andersen et al. expressly discloses that the artificial intelligence engine forms the answer in VXML code using information from web page documents and incorporates VXML responses into documents that are delivered to the caller in response to the call.

Saylor et al. discloses that an artificial intelligence engine forms an answer in VXML code using information from web page documents and incorporates VXML responses into documents that are delivered to a caller in response to a call (a user calls a call processing center, and said call center processes an information request

from said user via a voice browser module that uses speech recognition to interpret the user's request for information, whereby this information may be disseminated by an organization whose purpose is commerce-related, according to Column 3 Lines 36-41, Column 5 Lines 41-42 and 55), whereby the VXML information may delivered to the user as a text file, according to Column 8 Lines 34-38), whereby the VXML information may also be stored as web pages, according to Column 4 Line 46 to Column 5 Line 11).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Kassan as modified by Alpdemir as modified by Andersen et al. such that the artificial intelligence engine forms the answer in VXML code using information from web page documents and incorporates VXML responses into documents that are delivered to the caller in response to the call.

One of ordinary skill in the art would have been motivated to make this modification because the customer may be using a device that is more suited to receiving an answer in extensible markup language form than in the form of synthesized speech.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kassan in view of Alpdemir, further in view of Andersen et al., further in view of Saylor et al., further in view of Bigus et al., U.S. Patent Application Publication 2003/0084010.

Kassan discloses the artificial intelligence engine used for answering caller's queries utilizes the expertise and inputs associated with a live agent (the computer is

designed to replace a human operator as much as possible in answering callers' questions, according to Abstract, [0075], Fig. 2).

Neither Kassan, nor Alpdemir, nor Andersen et al., nor Saylor et al. expressly disclose the use of forward and backward chaining by an artificial intelligence engine.

Bigus et al. discloses the use of forward and backward chaining by an artificial intelligence engine in the context of a method wherein product support services are provided to customers (Abstract, [0011]-[0012], [0086]).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Kassan as modified by Alpdemir, as modified by Andersen et al., as modified by Saylor et al. by providing for the use of forward and backward chaining by an artificial intelligence engine.

One of ordinary skill in the art would have been motivated to make this modification in order to facilitate the identification, by the artificial intelligence engine, of recurring patterns that indicate an undesirable operational condition in the process of aiding a customer (Bigus et al.: [0087]).

Response to Arguments

9. Applicant's arguments with respect to Claims 1-20 have been considered but are moot in view of the new grounds of rejection, necessitated by Applicant's amendments, filed 30 September 2011.

10. Applicant's arguments filed 30 September 2011 have been fully considered but they are not persuasive.

Applicant asserts, on Page 10 of Remarks, that "Dezonno [sic] delivers the call to the agent 18C and the records to a terminal display 22C. Thus, they are delivered to two different destinations, not to a single engine or location (i.e., artificial intelligence engine). ... Thus, neither reference [Gavan et al. and Dezonmo] teaches delivery of a call and call records to the same destination i.e. to the same AI engine, as claimed." On the contrary, Dezonmo states "When the call is subsequently delivered to a selected agent 18C, the call record may now be used to simultaneously deliver customer records to the terminal display 22C of the selected agent 18C." [emphasis added]. Delivering a call to an agent and customer records to the terminal display of said agent does not constitute delivering the call and the records to two different locations. Rather, such an action constitutes delivering two different types of information to the respective appropriate output devices at the same location, since it is clear that the terminal display of the selected agent is at the same location as said selected agent.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW GENACK whose telephone number is (571)272-7541. The examiner can normally be reached on 9 AM to 5 PM Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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